

OUR BOOK SHELF.

An Attempt towards a Chemical Conception of the Ether. By Prof. D. Mendeléeff. Translated by George Kamensky. Pp. 51. (London: Longmans and Co., 1904.) Price 2s. net.

THIS tract, by the famous chemical philosopher whose seventieth birthday has recently been welcomed by the congratulations of the whole scientific world, contains the views of the author of the periodic law with regard to the classification under that law of the recently discovered inert gases. Prof. Mendeléeff places hydrogen at the head of his group i., containing the metals of the alkalis, and makes a special group zero for the inert gases. He gives his reasons for thinking that in this group there are two elements lighter than helium. One of them, of density about 0.2 compared with hydrogen, he identifies with coronium, the source of the characteristic spectrum of the solar corona. Such a gas could not, in accordance with the views first promulgated by Stoney, be retained in the earth's atmosphere, but might be prominent in the higher regions of that of the sun. The other, which he feels justified in taking of extremely low density, he proposes to identify with the ether, which cannot be held by any heavenly body, but is spread through all space. No mention is made of Maxwell's classical objection that the ether cannot be molecular, for if it were, all the energy of the universe would have been transferred into it. He notes incidentally, in connection with the uniform scale and composition of the universe, that most stars the masses of which are known are of the same order of magnitude as the sun. He thinks the condensation of ether towards the massive stars is connected with their intense radiation. He also thinks that the activity of the molecules of radium must be connected with a special condensation of ether around them; for his opinion, stated with reserve and without the certainty which he felt with regard to his views on the periodic law, is entirely against any breaking up of molecules or degradation of elements into other forms, and he therefore rejects the idea of electrons.

The obvious criticism on this is that he thus puts aside all the modern ideas as to the nature of radiation and electric action, and as to physics in general. He thinks, in fact, that the transmission of light will prove a more complex affair than the simple ideas of undulatory propagation on which it is now founded. He thinks that there is only one type of substance, and that a "working hypothesis" type of ether, by which he means a scheme of relations defining a substance with properties different from those of ordinary matter, must be ruled out. He now gives to the world these ideas which he has entertained, because he thinks that there may be little time left to him, and in the hands of others they may come to development. Though much at variance with the modes of thought of students of modern physics, one admires in reading about them the same originality and allusive suggestion that make his "Principles of Chemistry" such an attractive book. J. L.

Monographien aus der Geschichte der Chemie. Herausgegeben von Dr. Georg W. A. Kahlbaum. vii. Heft. (1) Jakob Berzelius. Von H. G. Söderbaum. Nach der wörtlichen Übersetzung von Emilie Wöhler bearbeitet von G. W. A. Kahlbaum. (2) Amedeo Avogadro und die molekulare Theorie. Von Icilio Guareschi. Deutsch von Dr. Otto Merckens. (Leipzig: Johann Ambrosius Barth, 1903.)

DR. KAHLBAUM continues to put all chemists under an obligation to him by the successive issue of his valuable monographs on the history of chemistry. The volume before us is of special interest from the fact that the

first part of it is a carefully edited translation of an autobiography of Berzelius. The statutes of the Royal Swedish Academy of Sciences require that each newly elected member shall deposit an account of his life and work at the time of his election, and that he shall add to it at stated periods so long as his membership continues. The autobiography before us is the result of that regulation.

It was translated into German, in the first instance, by Miss Emilie Wöhler, the daughter of the eminent chemist, himself a pupil and life-long friend of the great Swedish chemist, with the cooperation of Dr. Kahlbaum, and has been carefully edited and annotated by Prof. Söderbaum. No contribution to the personal history of chemistry that has appeared within recent years surpasses in interest this account by Berzelius of his own life. It is necessarily condensed from the very circumstances in which it was prepared, but all essential features of the career of its author down to 1840, a few years, therefore, before his death, are indicated.

The second monograph, on "Amedeo Avogadro und die Molekular Theorie," is by Prof. Icilio Guareschi, and has been translated into German by Dr. Otto Merckens.

It is a concise account of the rise of molecular theories in chemical and physical science, and of Avogadro's connection with the subject. Incidentally the author deals with the attempts made by Dr. Debus to transfer the credit hitherto associated with the name of the Italian physicist of being the first to indicate the generalisation that equal volumes of gases under comparable conditions of temperature and pressure contain the same number of molecules to John Dalton.

The discussion will be of interest, especially to English chemists. At the same time, it can hardly be said to be convincing or to advance the matter much beyond what is generally recognised as its true position.

De Vi Physicâ et Imbecillitate Darwinianâ disputavit Franciscus Gulielmus Bain, Artium Magister. Pp. 103. (Oxford and London: James Parker and Co., 1903.) Price 2s. 6d. net.

WE gather from this work that its author was present as a boy at Darwin's funeral in Westminster Abbey, and had his toe trodden on by the King himself, then Prince of Wales; that the impression produced on him was such that he determined to devote himself in future years to finding out who Darwin was; and that having now succeeded in this laudable endeavour, he cannot visit the British Museum of Natural History and look up at the statue on the staircase facing the entrance without being seized by inextinguishable laughter. "It is this curious incarnation of philosophical poverty and unscientific perversity," he exclaims, "who is elevated into a scientific deity. A theory-blinded and arbitrary denier of Nature's organic and creative power is worshipped as a god in her own temple, every object in which gives the lie to his creed." "The theory of Darwin," he says in another place, "is the *ne plus ultra* of human stupidity. It never could have occurred, except to one incapable of understanding the corollaries of organisation: but once having occurred, it never could have been retained and defended, except by one who was capable of systematically ignoring whole classes of animal organisation, and attending only to instances that prove nothing at all." But Darwin is not the only victim of the author's indignation. Of another name, scarcely less famous than Darwin's, we read that "the ravings of an old woman in a lunatic asylum would be wisdom in comparison with the latest views of this eminent philosopher." What, we may ask, is the cause of this lamentable

collapse on the part of modern men of science? The explanation offered is simple; it is merely that they have learned their method from "that unfortunate being J. S. Mill. I consider the authority of J. S. Mill, and the fact that his 'Logic' and 'Political Economy' were and still are text-books in the University of Oxford, to be a national disaster, and almost equivalent to destroying English intelligence in the germ." Most of the opinions here advanced are of equal weight with the foregoing.

We have let the author of this elegantly printed booklet speak for himself. He abounds in humour both of the conscious and unconscious variety, the latter predominating.

F. A. D.

Bray and Environs. (Bray, Ireland: Published and Sold by Arthur L. Doran, 1903.) Price 1s. net.

MR. DORAN has produced a cheerful and original little guide to the gateway of the Wicklow highlands, and devotes five pages to the botany, geology, and ornithology of the district. In the botanical part he relies on the careful work of Mr. R. Lloyd Praeger ("Irish Topographical Botany"), published by the Royal Irish Academy, but he does not seem to have utilised the admirable new memoir to the Dublin area, prepared by Mr. Lamplugh and his colleagues, when drawing up his geological notes. This Geological Survey publication, including Killiney and many of the places mentioned, should be referred to in the next edition. Messrs. Ussher and Warren may then also appear as authorities in the section on the Irish birds.

But the present book is distinctly attractive, and full of quaintly expressed ideas. Anyone who reads the quotations from the Venerable Bede and Dr. Raverty, the medical superintendent officer of health, set in juxtaposition on p. 5, cannot fail to seek further, confident that he is in pleasant hands. Some of the references owe their sparkle to a touch of irony, such as the unkind mention on p. 11 of Mr. Evans and his votive offerings. Apropos of this, the holy well in Mr. Barrington's land in co. Dublin, with its twentieth century offerings of rags, is mentioned quite naturally on p. 35. Archæologists will note a profound significance in the very simplicity of Mr. Doran's words, and will, it is to be hoped, visit the old-world valley with no other feeling than respect. The present writer was once guided there in the gathering dusk, when Dublin, ten miles distant, seemed to lie, by another measure, thirty centuries away.

The mention of this obscure well, and of the little used but singularly picturesque route round Carrickgollogan (p. 89), will serve to show the perceptive spirit in which Mr. Doran has written for the tourist.

G. A. J. C.

Senior Country Reader. III. By H. B. M. Buchanan, B.A. Pp. viii+293; with 143 illustrations. (London: Macmillan and Co., Ltd., 1904.) Price 2s.

AN enthusiastic reception may be predicted for this volume on the part of boys and girls in rural schools who have studied Mr. Buchanan's previous books in this series. There is a surprising amount of information provided, but it is generally presented in a sufficiently interesting manner to avoid weariness on the part of the young reader. The subjects treated—such as manuring, crops, cottage gardens, pigs and poultry—are just those which engage the practical attention of the children out of school, and about which they must know something after leaving school. It is clear from the beginning that Mr. Buchanan writes from personal experience in agricultural pursuits, and this fact will inspire the confidence of the student, while the numerous good illustrations will make quite clear what is being described.

NO. 1798, VOL. 69]

LETTERS TO THE EDITOR.

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A New Mineral from Ceylon.

SINCE writing last week, I have made further experiments on the cubical mineral, and have myself carefully examined the earth constituents. The statement made last week, that there is only an insignificant amount of thorium present, must be modified. On re-determining the equivalent of the crude oxalate, prepared after the yttrium metals had been separated by treatment with potassium sulphate, it has come out higher than I expected; indeed, assuming the metal present to be a tetrad, its atomic weight is even higher than that of thorium—about 240, as the mean of two closely concordant determinations. The lower equivalents mentioned in the previous letter were determined as fractions of the double potassium sulphate, prepared on a large scale. This high atomic weight points to the presence of unknown elements of higher atomic weight than thorium; indeed, the mineral appears to be of very complex composition. It may be incidentally remarked that the crude oxalate mentioned above must have contained all the cerium group, and if any considerable proportion of the elements of this group is present, the amount of the element with higher atomic weight than that of thorium would have to be proportionately increased. The high radio-activity would point to the presence of the elements obtained from thorium residues mentioned by Prof. Baskerville, which he states to be radio-active.

The equivalent was determined by comparing the weight of oxide from a known weight of oxalate with the percentage of oxalic acid, as determined by titration of another sample of the same preparation.

WILLIAM RAMSAY.

THE letter dealing with the composition of a new mineral from Ceylon contributed by Sir W. Ramsay to NATURE of April 7 (p. 533) reveals certain discrepancies between the analytical results obtained with this material at University College and those of the Scientific and Technical Department of the Imperial Institute recorded in Prof. Dunstan's letter on this subject (March 31, p. 510). Sir W. Ramsay's results indicate that this mineral is practically free from thoria, whereas those recorded by Prof. Dunstan show that it is particularly rich in this oxide. As Prof. Dunstan is at present abroad, and therefore unable at the moment to comment on Sir W. Ramsay's letter, I may be permitted to direct attention to two observations mentioned by Sir W. Ramsay, which appear to be open to question.

He states that the oxalate obtained from a solution of the mineral is soluble in excess of a solution of ammonium oxalate, and that this reaction excludes the presence of thorium or metals of the cerium group, and points to the presence of zirconium. This inference is not in harmony with the observation recorded by Bahr (*Annalen*, 1864, 132, 231), that thorium oxalate is soluble in excess of ammonium oxalate, a fact since confirmed by Bunsen and by Brauner (*Journ. Chem. Soc.*, 1898, 73, 951). Further, the solubility of the thorium salt in excess of ammonium oxalate has been used by Hintz and Weber (*Zeit. Anal. Chem.*, 1897, 36, 27) and by Glaser (*ibid.*, p. 213) as a method of separating thoria from monazite and similar minerals. It would appear, therefore, that the principal evidence brought forward by Sir W. Ramsay in support of his conclusion that the mineral contains no thoria in reality supports Prof. Dunstan's statement that it is rich in this oxide. It may be added that the solubility of the oxalate obtained from the mineral in ammonium oxalate had already been observed in this Department.

Sir W. Ramsay appears to be of opinion that the principal constituent of the mineral is the oxide of a new tetravalent element with an equivalent of about 44.7. If this were the case the specific gravity of the mineral would probably be less than 8.2, whereas the determinations of this constant